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(54) COVER TAPE FOR PACKAGING OF ELECTRONIC PART

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a cover tape which prevents troubles regarding the peeling strength, and troubles at the time of mounting, can be manufactured at a low cost, and is transparent; and also, save energy to reduce the environmental pollution by reducing the consumption of an organic solvent.
SOLUTION: This cover tape for the packaging of an electronic part can be heat-sealed on a carrier tape made of a plastic, wherein housing pockets to house an electronic part are continuously formed. In this case, the cover tape comprises at least two layers of an adhesive layer and a base material layer from the heat-sealed side with the carrier tape, and the means to laminate the layers is a co-extrusion method. Also, the base material layer is formed of either one of a polyester, a nylon, and a polypropylene.

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CLAIMS

[Claim(s)]
[Claim 1] The covering tape for an electronic-parts package characterized by being the covering tape which can carry out a heat seal to the carrier tape made from plastics which formed continuously the receipt pocket which contains electronic parts, and for the means of an adhesives layer and a base material layer which consists of two-layer at least and carries out the laminating of these being the co-extruding method sequentially from the side which carries out a heat seal to a carrier tape, and a base material layer being in any of polyester, nylon, and polypropylene.
[Claim 2] The covering tape for an electronic-parts package which it is the covering tape which can carry out a heat seal to the carrier tape made from plastics which formed continuously the receipt pocket which contains electronic parts, and the means which becomes order from at least three layers, an adhesives layer, an interlayer, and a base material layer, from the side which carries out a heat seal to a carrier tape, and carries out the laminating of an interlayer and the base material layer is the co-extruding method, and is characterized by for the means which carries out the laminating of the adhesives layer to be a GURABYUA coating method.
[Claim 3] The covering tape for an electronic-parts package according to claim 1 characterized by this alpha olefin being in any of vinyl acetate, an acrylic acid, acrylic ester, a methacrylic acid, and methacrylic ester by an adhesives layer consisting of an ethylene-alpha olefin copolymer.
[Claim 4] The covering tape for an electronic-parts package according to claim 2 characterized by this alpha olefin being in any of vinyl acetate, an acrylic acid, acrylic ester, a methacrylic acid, and methacrylic ester by the middle class consisting of an ethylene-alpha olefin copolymer.
[Claim 5] The covering tape for an electronic-parts package according to claim 2 or 4 on which an alpha olefin is characterized by being vinyl acetate, an acrylic acid, acrylic ester, a methacrylic acid, the ethylene-alpha olefin copolymer it is [copolymer] in any of methacrylic ester or polymethacrylic acid ester, a polyvinyl chloride-vinyl acetate copolymer, chlorination polypropylene, and polyurethane by the adhesives layer.
[Claim 6] The covering tape for an electronic-parts package according to claim 1, 2, 3, 4, or 5 whose degree of overcast the total light transmission of a covering tape is 60% or less at 70% or more.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention protects electronic parts from contamination, on the occasion of storage of electronic parts, transportation, and wearing, since it mounts in an electronic-circuitry substrate, it is aligned, and it relates to the covering tape by which a seal may be carried out to the carrier tape made from plastics which formed the receipt pocket among the package objects which have the function which can be taken out.
[0002]
[Description of the Prior Art] Electronic parts for surface mounts, such as transistors including IC, diode, a capacitor, and a piezoelectric-device register, are packed and supplied to the package object which consists of a covering tape which can carry out the seal of the pocket which can be contained, and by which embossing shaping was carried out to the carrier tape made from plastics formed continuously, and a carrier tape according to the configuration of electronic parts. After the electronic parts of contents exfoliate the covering tape of a package object, they are taken out automatically and the surface mount is carried out to the electronic-circuitry substrate. In recent years, it miniaturizes and electronic parts are becoming a light weight and a thin shape.
[0003] On the other hand, the surface mount rate has also accelerated both the rates by which improvement in the speed progresses and a covering tape is torn off from a carrier tape. The pulsating phenomenon referred to as being as becoming weak **** [, and] appears notably, and the so-called jumping trouble said that the packed electronic parts jump out of a carrier tape is increasing. [that the reinforcement at the time of being torn off (following, peel strength) becomes strong for the reason]
[0004] When the electronic parts packed are comparatively large, in order to prevent the elutriation from the transportation way and a carrier tape, peel strength is set up strongly beforehand in many cases. However, if peel strength carries out aging in that case and peel strength becomes strong too much, the trouble with which it becomes impossible to remove smoothly, and it becomes impossible to take out electronic parts and a covering tape fractures a covering tape may occur at the time of mounting. In order to prevent the trouble about peel strength conventionally, this purpose has been satisfied by making the film which mixed several sorts of resin in the adhesives layer, produced the film, and was obtained rival the film which serves as base material layers, such as biaxial-stretching polyester film, using the dry laminate method or the extrusion laminating method.
[0005] Moreover, in order to prevent the trouble at the time of mounting of fracture of a covering tape etc., by making two oriented films rival by the dry laminate method etc., toughening of the base material layer was carried out, and this purpose has been satisfied. However, since a production process is long, a manufacturing cost is applied and it is comparatively high-priced to low-cost-izing of the recent years of electronic parts that the lamination process which makes each of these cures rival the process which manufactures a film is separate etc.
[0006]
[Problem(s) to be Solved by the Invention] This invention prevents the trouble about the above-mentioned peel strength, and the trouble at the time of mounting, and offers the transparent covering tape in which low cost production is possible. Moreover, by shortening production processes, such as dry laminate and an extrusion lamination, the amount of the organic solvent used can be reduced, environmental pollution can be decreased upwards, and saving of energy is also attained.
[0007]

[Means for Solving the Problem] The means which becomes order from two-layer [of an adhesives layer and a base material layer] from the side which is the covering tape which can carry out a heat seal, and carries out a heat seal to a carrier tape at least, and carries out the laminating of these to the carrier tape made from plastics which formed continuously the receipt pocket in which this invention contains electronic parts is the co-extruding method, and base material layers are polyester, nylon, and the covering tape for an electronic-parts package it is [tape] in any of polypropylene. Or in order to stabilize peel strength more or to give conductivity, it is the covering tape for an electronic-parts package which prepared the middle class instead of the above-mentioned adhesives layer, and prepared the adhesives layer in the front face with the GURABYUA coating method further. Furthermore, the degree of overcast is the transparent covering tape for an electronic-parts package whose total light transmission is all 60% or less at 70% or more.

[0008]

[Embodiment of the Invention] The component of the covering tape of this invention is explained using an example. Examples 1 are nylon (it abbreviates to Ny hereafter), a maleic-anhydride denaturation PE layer (it abbreviates to AD hereafter), a low-density-polyethylene layer (it abbreviates to LDPE hereafter), AD, and the film that carried out the laminating to the order of an ethylene-vinylacetate copolymer (it abbreviates to EVA hereafter) by the co-extruding method. Ny is the base material layer mentioned by claim 1, and EVA is an adhesives layer. The LDPE layer was prepared as an interlayer for the purpose of the cost cut. It does not interfere, even if it will increase the thickness of a part for this thickness, and an adhesives layer, if there is no need for a cost cut. AD is playing a role of the adhesives for raising the reinforcement between layers of each class.

[0009] As for Ny, polyester and polypropylene do not interfere, either. Moreover, even if it substitutes with which ethylene-alpha olefin copolymer which also mentioned EVA by claim 3, it does not interfere. It does not interfere, even if it substitutes similarly all the resin that mentioned by the claim, such as a base material layer, an interlayer, and an adhesives layer, for the example described below and the example of a comparison.

[0010] The example 1 of a comparison is the film which Ny of a base material layer used the biaxial-stretching nylon film, and prepared the anchor coat material (it abbreviates to AC hereafter) which is urethane system thermosetting adhesive in the field of one of these although it was this configuration mostly with the example 1, and carried out the laminating of LDPE and EVA to order by the extrusion laminating method on this front face. Since an example 1 did not have the need of producing Ny beforehand, compared with the example 1 of a comparison, it was able to carry out 1 process compaction.

[0011] After carrying out the laminating of the example 2 to the order of Ny, AD, Ny, AD, and EVA by the co-extruding method, it is the film which may have had the polymethyl methacrylate (it abbreviates to PMMA hereafter) an EVA front face coated by the GURABYUA coating method after corona treatment.

[0012] On the other hand, the example 2 of a comparison used the biaxial-stretching nylon film, and coated one film with the adhesives for dry laminates (it abbreviates to DL hereafter) which are urethane system thermosetting adhesive, and each of two N(ies) made it rival another Ny by the dry laminate method. Similarly one side of the obtained laminate film was coated with DL, and it was made to rival by the EVA film and the dry laminate method. The PMMA layer produced the film by the example 2 and this approach. Since an example 2 did not have the need of producing Ny and EVA beforehand, compared with the example 2 of a comparison, it was able to carry out 3 process compaction.

[0013] An example 3 and the example 3 of a comparison are examples which used the polymethyl-methacrylate-methacrylic-acid butyl copolymer (it abbreviates to PMMA-BMA hereafter) instead of LDPE and PMMA instead of EVA by the same process as an example 2 and the example 2 of a comparison. However, PMMA-BMA was mixed and coated with the zinc oxide (it abbreviates to ZnO hereafter) which doped aluminum in order to give conductivity. Since an example 3 did not have the need of producing Ny and LDPE beforehand, compared with the example 3 of a comparison, it was able to carry out 2 process compaction.

[0014] After carrying out the laminating of the example 4 to the order of Ny, AD, and LDPE by the co-extruding method, it is the film which the film which may have had PMMA a LDPE front face coated by the GURABYUA coating method after corona treatment was made to rival by the dry laminate method, and was obtained aimed at obtaining toughening in the Ny side and the biaxial-stretching polyethylene terephthalate film (it abbreviates to PET hereafter). This example also mixed and coated PMMA with the tin oxide (it abbreviates to ATO hereafter) which doped antimony in order to give conductivity like an example 3.

[0015] On the other hand, after carrying out the laminating of the example 4 of a comparison to the order of PET, DL, Ny, DL, and LDPE by the dry laminate method, it is the film which might be coated like the example 4 after corona treatment in the LDPE front face. Since an example 4 did not have the need of producing Ny and LDPE beforehand, compared with the example 4 of a comparison, it has been shortened by two processes by each.
[0016] the line by which the example 5 was produced using Ny, AD, and a metallocene catalyst -- after carrying out a laminating to the order of low density polyethylene (it abbreviates to MLLDPE hereafter) by the co-extruding method, it is the film which PET was made to rival by the dry laminate method the Ny side of the film which may have had the vinyl chloride vinyl acetate copolymer (it abbreviates to PVC-VA hereafter) a MLLDPE front face coated by the GURABYUA coating method after corona treatment, and was obtained.
[0017] On the other hand, after carrying out the laminating of the example 5 of a comparison to the order of PET, DL, Ny, DL, and MLLDPE by the dry laminate method, it is the film which may have had PVC-VA a MLLDPE front face coated by the GURABYUA coating method after corona treatment. Since an example 5 did not have the need of producing MLLDPE beforehand, compared with the example 5 of a comparison, it was able to carry out 1 process compaction.
[0018] An example 6 and the example 6 of a comparison are the films which PET was made to rival by the dry laminate method the Ny side of the film obtained in the example 1 and the example 1 of a comparison, and were obtained. Since an example 6 did not have the need of producing Ny beforehand, compared with the example 6 of a comparison, it was able to carry out 1 process compaction.
[0019] In the mode of this invention, although it does not have an antistatic-agent layer on the front face of a base material layer, it is more desirable to have an antistatic-agent layer. An antistatic-agent layer consists of conductive fillers, such as complex of pi electron conjugated-system conductive polymers, such as a surface active agent, a polypyrrole system, the poly aniline system, and the poly thiophene system, or tin oxide, indium oxide, a zinc oxide, titanium oxide, carbon black, Si system organic compound, a polyalkylene glycol, and perchlorates, such as lithium perchlorate, and in order to raise antistatic nature, it may use what doped antimony etc. for a conductive filler. In order to give antistatic nature to the adhesives layer mentioned by claims 1 and 2, an adhesives layer front face may be coated with antistatic agents, such as a conductive polymer, a conductive filler, and a surface active agent, or this antistatic agent may be scoured in adhesives.
[0020] As for this covering tape, 70% or more, total light transmission must carry out the laminating of the degree of overcast so that it may become 60% or less. It becomes difficult, in case it inspects whether contents are inserted correctly after it packs electronic parts on a covering tape, although total light transmission will be based also on an inspector, if less than 70% or the degree of overcast becomes 60% or more.
[0021]
[Example] Since it mentioned above about the lamination of an example, and the detail of a process, it omits. Although the abbreviation lamination and those properties of an example of this invention are shown below, this invention is not limited at all by these examples. The value which performed the seal at a carrier tape made [the covering tape obtained in Table 1] from the polyvinyl chloride of 8mm width after a slit at 5.5mm width and 180 degrees C, and measured peel strength after a seal and 5 minutes was shown in the peel strength column of Table 1. Total light transmission and the degree of overcast are JIS. It measured according to K7105. Hereafter, the measured value of the lamination of an example, peel strength, light transmission, and the degree of overcast is shown in Table 1, and the measured value of the lamination of the example of a comparison, peel strength, light transmission, and the degree of overcast is shown in Table 2.
[0022]
[Table 1]
【表1】

層	実施例1	実施例2	実施例3	実施例4	実施例5	実施例6
第1層	Ny 15	Ny 12	Ny 12	PET 9	PET 12	PET 16
第2層	AD 2	AD 2	AD 2	DL 2	DL 2	DL 2
第3層	LDPE 15	Ny 12	Ny 12	Ny 15	Ny 15	Ny 15
第4層	AD 2	AD 2	AD 2	AD 2	AD 2	AD 2
第5層	EVA 15	EVA 40	LDPE 40	LDPE 40	MLLDPE 30	LDPE 15
第6層		PMMA 1	PMMA-BMA +ZnO 1	PMMA-BMA +ATO 1	PVC-VA 1	AD 2
第7層						EVA 15
剥離強度	35	41	25	28	51	48
光線透過率	88	89	78	90	89	87
曇度	15	17	54	26	21	15

[0023]
[Table 2]
【表2】

層	比較例1		比較例2		比較例3		比較例4		比較例5		比較例6	
第1層	Ny	15	Ny	12	Ny	12	PET	9	PET	12	PET	16
第2層	AC	1	DL	2	DL	2	DL	2	DL	2	DL	2
第3層	LDPE	15	Ny	12	Ny	12	Ny	15	Ny	15	Ny	15
第4層	EVA	15	DL	2	DL	2	DL	2	DL	2	AC	1
第5層			EVA	40	LDPE	40	LDPE	40	MLLDPE	30	LDPE	15
第6層			PMMA	1	PMMA-BMA +ZnO	1	PMMA-BMA +ATO	1	PVC-VA	1	EVA	15
第7層												
剥離強度	38		42		28		26		52		46	
光線透過率	89		90		78		90		89		90	
曇度	16		16		53		28		27		14	

* The right figure in the class column shows the thickness (unit mum) of each class.
* The unit of the physical-properties value in a table is each. Peel strength cN, light transmission %, degree of overcast %.
[0024]
[Effect of the Invention] According to this invention, the transparent covering tape whose peel strength was stable can be offered by the simple production process.

[Translation done.]